

OAHU RAILWAY & LAND COMPANY TRESTLE RUINS
Spanning Makaha Stream between Makaha Beach & Farrington
Highway, near Kili Drive
Honolulu
Honolulu County
Hawaii

HAER HI-91
HAER HI-91

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
PACIFIC WEST REGIONAL OFFICE
National Park Service
U.S. Department of the Interior
1111 Jackson Street, Suite 700
Oakland, CA 94607

HISTORIC AMERICAN ENGINEERING RECORD
OAHU RAILWAY & LAND COMPANY TRESTLE RUINS

HAER No. HI-91

<u>Location:</u>	Farrington Highway near Kili Drive Makaha Stream City & County of Honolulu Hawaii USGS 7.5 minute series topographic map, Waianae, HI 1998 Universal Transverse Mercator (UTM) coordinates: 04.2128629.15813212 04.2128579.15813153
<u>Date of Construction:</u>	Circa 1897
<u>Engineers & Builders:</u>	Unknown
<u>Present Owner:</u>	State of Hawaii Department of Transportation
<u>Present Occupant:</u>	Not Applicable
<u>Present Use:</u>	Abandoned
<u>Significance:</u>	The masonry footings and abutments of the former Oahu Railway & Land Company's (OR & L) railroad bridges are significant for their associations with the former railroad and for the information they may yield on nineteenth century railroad grade and trestle construction techniques.
<u>Report Prepared by:</u>	Don J. Hibbard, Ph.D. Architectural Historian Mason Architects, Inc. 119 Merchant Street, Suite 501 Honolulu, HI 96813
<u>Date:</u>	August 2009

I. DESCRIPTION AND ENGINEERING INFORMATION

The OR & L trestle ruins are located approximately 30' downstream of Makaha Bridges 3 and 3A, between Makaha Beach Park and Farrington Highway. The no longer extant trestles (see HAER No. HI-90) once carried the railway's tracks over two intermittent channels of Makaha Stream. The trestles were part of a railroad system which extended from Honolulu, across the Ewa plain, along Oahu's leeward coast, around Kaena Point and along the north shore of Oahu to Kahuku.

The ruins downstream of Makaha Bridge Number 3: These include stone and mortar walls protecting the slopes of the banks below the trestle abutments and three rectangular reinforced concrete foundations located in the stream bed. The two concrete abutments for the railroad trestle no longer exist, although the abutment on the south shore was reported still in place in 2006.¹ The lava rock and mortar walls that provided slope protection are also in poor condition. The south wall measures approximately 24' in length and about 12' high, and is falling apart. The north wall is almost gone, with only a few stones remaining.

In the stream are three concrete foundations which previously supported the trestle. In 2006 these were completely buried in the sand. The rectangular shaped foundations are approximately 18' long, 2'-6" wide, and rise at least 3' above the present stream bed. They are spaced approximately 20' apart, on center, and are tapered on their upstream ends.

The ruins downstream of Makaha Bridge Number 3A: These include reinforced concrete abutments with lava rock end walls and a slope wall to protect the north abutment from stream erosion. In addition, there are three rectangular reinforced concrete foundations located in the stream bed, although when the site was photographed in July 2009, only one of the three foundations was visible due to overgrown vegetation. The two concrete abutments for the railroad trestle are in good condition and are set back from the present stream bed. The abutments are two tiered. The northern abutment measures approximately 23' long by 6' wide and is approximately 5' high. The southern abutment is 24' long by 42' wide, and is approximately 4' high. The lava rock end walls for both abutments remain in good condition. The slope wall for the north abutment also remains in good condition.

In the stream are three concrete foundations which previously supported the trestle. These are similar in size to the foundations located downstream of Bridge 3. In March 2006 all three foundations were exposed;² however, when

¹ McDermott and Tulchin, p. 86

² Ibid, pp 86-87

the ruins were photographically recorded in July 2009, only the center foundation was visible. It stood approximately 3' above the stream's water level.

The former railroad berm: This is still evident, extending away from all the trestle abutments as a flat, slightly elevated, approximately 15"-high area that is approximately 6' wide. The berm is overgrown with tall grasses and kiawe trees in many areas, although the segment extending south from the south abutment located downstream of Bridge No. 3 is maintained as a lawn. The berm appears to be composed of locally available sediments, with no indications of gravel imported to the site.

II. HISTORICAL CONTEXT

The former OR & L right-of-way between Halawa stream at Pearl Harbor and Auyong Homestead Road in Nanakuli is listed in the National Register of Historic Places. The remnants of the former railroad at Makaha, which are the subject of this report, are not part of that nomination; however, they are significant for their associations with the railroad and for the information they are likely to yield concerning the construction of the railroad.

The OR & L Railway became reality thanks to the efforts of Benjamin Franklin Dillingham. Dillingham was born in Massachusetts in 1844, and came to Hawaii in 1865, as first mate on the bark, *Whistler*. While in Honolulu he broke his leg and in the course of his convalescence decided to make Honolulu his home. In 1869 he married Emma Louisa Smith, the daughter of missionary Lowell Smith, the pastor of Kaumakapili Church. Dillingham managed to eke out a living by operating a hardware business as well as a dairy, but it was the development of the OR & L Railway that made his fortune.

Following the successful boring of artesian wells on the Ewa plain by James Campbell in 1879, Dillingham began to seriously contemplate the development of this hitherto arid area of Oahu, and in 1889 he leased 41,000 acres in Ewa and another 15,000 in Kahuku from Campbell for fifty years at \$50,000 a year. In addition to negotiating these land leases, Dillingham obtained from the Hawaii legislature and King Kalakaua in 1888 a charter to operate a steam railroad, "for the carriage of passengers and freight" (National Register Nomination Form). Dillingham garnered economic support from Mark P. Robinson, Samuel C. Allen, John H. Paty, James B. Castle and Robert Lewers, and on February 4, 1889 chartered the Oahu Railway & Land Company. Simultaneously Dillingham subleased the Ewa lands to Castle & Cooke, and the Kahuku lands to James B. Castle and Lorrin Thurston, who developed sugar plantations there, knowing the railroad was being built which would access and service the plantations. To further his economic advantages Dillingham leased large acreage in Waialua, and encouraged Castle & Cooke to acquire the Halstead's sugar plantation located there, which the company did through its specially formed subsidiary,

Waialua Agricultural Company. Dillingham also encouraged the development of the Oahu Sugar Company, whose first board included such stockholders as S.C. Allen, Mark Robinson, Dillingham, Paul Isenberg, and J.F. Hackfeld.

Charles H. Kluegel, a civil engineer, was hired to direct the survey work and construction of the railroad. He was assisted by George P. Denison, who later became general manager of the line. The first track of German-made steel rails was laid in August 1889, and on November 16, 1890, King Kalakaua's birthday, the railroad officially opened to the public, running between Honolulu and Aiea. By January 1890 tracks were laid to Pearl City, and by July 4, 1895 the railroad extended as far as Waianae. Between 1895 and January 1, 1899 the railroad was built around to Kahuku. Most likely the trestles ruins that are the subject of this study were erected in late 1895, as they are slightly over two miles from Waianae.

The opening of this 36-inch narrow-gauge railroad track led to an agricultural boom for Oahu. The railroad carried to the docks in Honolulu the sugar produced at various plantations. These included the Ewa Plantation (started in 1890), Oahu Sugar Company (started in 1898), Waialua Agricultural Company (greatly expanded in 1898), and Kahuku Plantation (started in 1890), all enterprises with which the economic backers of the railroad were involved. The railroad also carried sugar produced at Waianae Plantation (started in 1879) operated by Hermann A. Widemann, and the Honolulu Sugar Company (started in 1899) developed by Suessmann and Wurmser of San Francisco, the producers of S & W canned vegetables. In addition, the railway eventually serviced James Dole's pineapple operations in Wahiawa, and with the development of Pearl Harbor and Schofield Barracks the military became a major customer. Passenger service also flourished. In 1891 a total of 133,644 passengers rode the line, and ridership continued to grow in the succeeding years, reaching almost one million by 1915.

The advent of reasonably priced automobiles signaled the beginning of the end for the OR & L. Foreseeing declining revenues, the company last ordered a new locomotive in 1926. Gradually passenger cars were converted to box cars. The improvement of Oahu's highway system during the 1930s cut even more deeply into the OR & L's profits. World War II revitalized the railway, with the trains hauling ammunition, supplies and equipment as well as over two million passengers a year. However, the intense use of the system by the military took its toll on the equipment, and with the conclusion of the war the railroad was confronted with the need for a major overhaul. In addition, the end of the war signaled a drastic reduction in passenger trade. To further compound the railroad's difficulties, a tsunami struck Hawaii on April 1, 1946 and portions of OR & L's tracks were destroyed, especially in the areas on either side of Kaena Point. Although the tracks were repaired, Kahuku and Waialua Plantations in the interim had to transport their sugar by truck and they discovered the motor

vehicles to be a better means of transport than the railroad. As a result the OR & L's board of directors came to realize the cost of refurbishing the railroad was economically infeasible when compared to the costs of using trucks to haul freight. Thus, on December 12, 1947 all railway operations outside of Honolulu were discontinued. The company maintained a pineapple run from the cannery to Pier 34 until 1972, and the Navy took over the section of line between Lualualei and Pearl Harbor to shuttle bombs, missiles and torpedoes, while the remainder of the track was removed and recycled.

III. SOURCES

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National Register of Historic Places Nomination, "Oahu Railway & Land Company Right-of-Way," John M. Knaus, 1983.

Yardley, Toni, *Millstones and Milestones, the Career of B. F. Dillingham 1844-1918*, Honolulu: University of Hawaii Press, 1981.

IV. PROJECT INFORMATION

The following documentation was prepared in response to the proposal to realign Farrington Highway and remove Makaha Bridges 3 and 3A. The purpose of this documentation is to historically and photographically record the remnants of the former OR & L railway trestles. The State of Hawaii Department of Transportation (DOT) and the Hawaii State Historic Preservation Division (SHPD) have agreed that the ruins are over fifty years old and appear to meet

the criteria for listing in the Hawaii and National Registers of Historic Places. SHPD recommended that Historic American Engineering Record (HAER) documentation be completed as a means of mitigating the loss of these historic properties. The DOT agreed to the SHPD's request for documentation following HAER standards.

The project manager for the HAER documentation was Polly Cosson Tice of Mason Architects, Inc. Don J. Hibbard, Ph.D. of Mason Architects was the researcher and author of the report. Both Polly Cosson Tice and Don Hibbard are architectural historians who meet the Secretary of the Interior's Professional Qualifications in architectural history. Carol Stimson of Mason Architects assisted with the editing and production of the reports. The large-format photographs were taken by David Franzen of Franzen Photography.

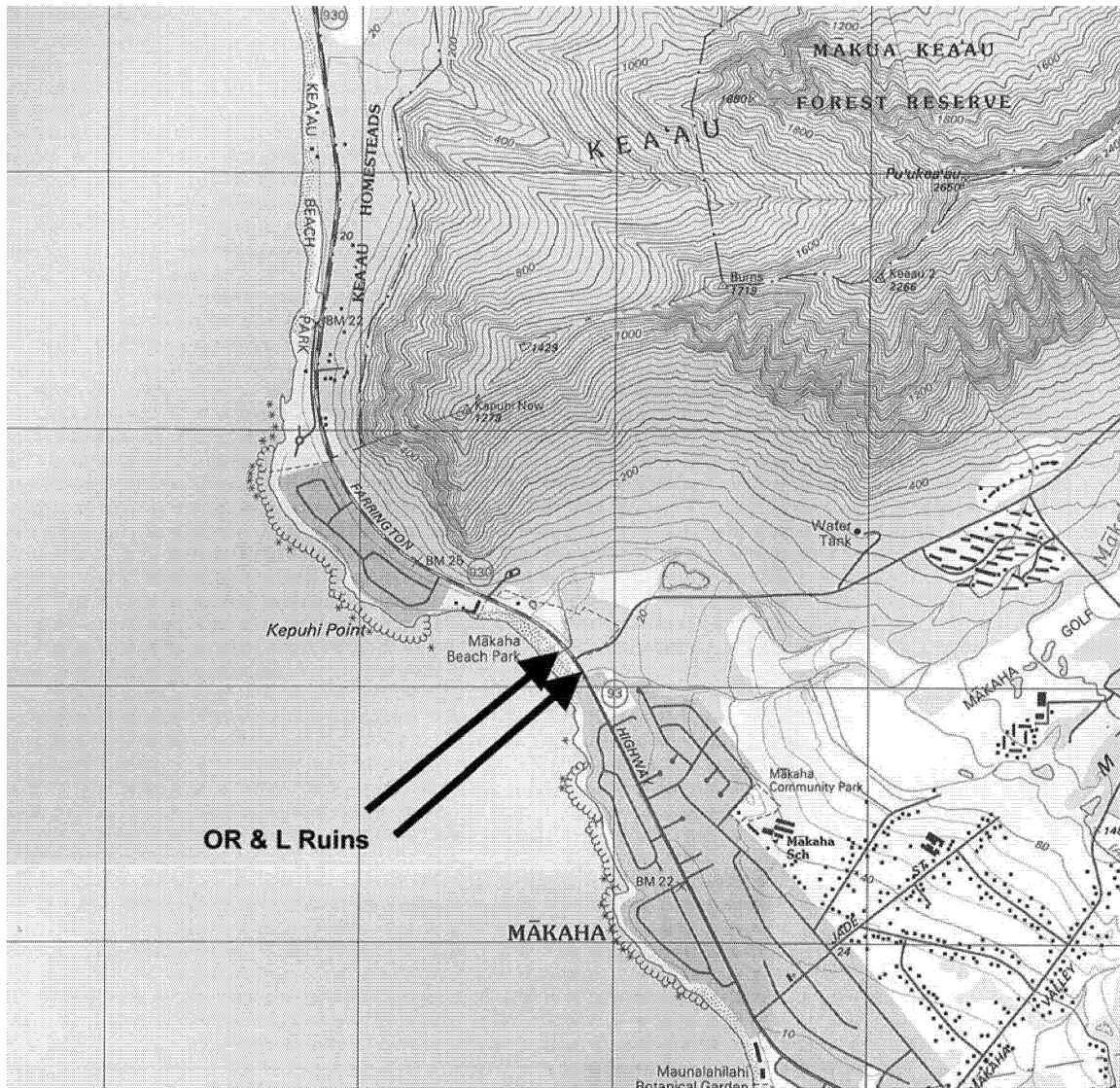
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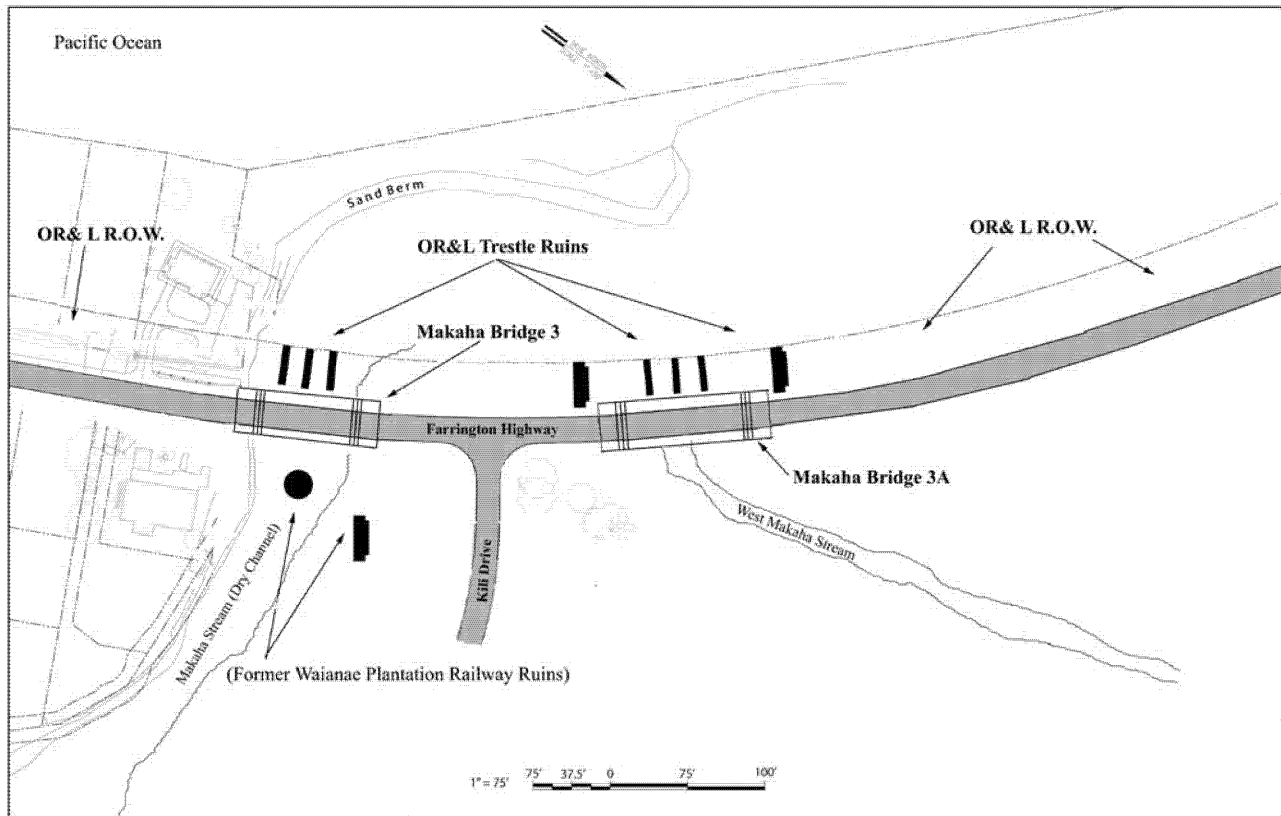
Location Map

U.S.G.S. Waianae, Hawaii, 1998:



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Site Map: R.M. Towill Corporation project base map, dated January 2010. MAI additions of Trestle and Railway Ruins and select notations added August, 2010.



Typical OR & L Trestle Crossing an Intermittent Stream near Kaena Point

